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Recommended Citation

Rhinehart, Carlie, "Examining the Benefits and Client Satisfaction of the Open Arms of Minnesota Meal Service Program" (2018). *Capstone Experience*. 24.
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Examining the Benefits and Client Satisfaction of the Open Arms of Minnesota Meal Service Program

Carlie Rhinehart B.S.

April 20, 2018

Abstract

Chronic disease can leave individuals incapable of caring for themselves, leading to a low quality of life. Public health researchers have proven how crucial medically tailored meals are to those fighting such chronic diseases. Open Arms is a local nonprofit that started in 1986. They make and deliver meals, free of charge, to people with life threatening illnesses.

The goal of this study is to examine the benefits of the meal services provided by Open Arms of Minnesota to clients who are chronically ill. To learn about the benefits, analysis was conducted on the client satisfaction survey data collected. The anonymous survey was sent to all 619 primary clients in July 2017 electronically and as a paper copy. A total of 290 surveys were collected in August, leading to a 47% response rate. Overall satisfaction was measured by examining categorical responses to questions about food preference, food quality/quantity, Open Arms staff and volunteers, effectiveness of meals, resources and child/caregiver meal satisfaction. Satisfaction was shown by using percentages. Additionally, bivariate analysis of two important factors, primary diagnosis and meal plan type, were performed by using the chi-squared test to show the relationship between these variables using a p-value of 0.05.

Results concluded a very high satisfaction with Open Arms service. Ninety-seven percent are satisfied with food quality, and 98% agree that the meals provided have helped them.

Clients receiving different meal plans reported different levels of satisfaction with food quantity. Food quantity was based upon clients' opinion of the overall amount of food, whether that be their opinion of portion sizes or total amount of food delivered in a week. A higher percentage of clients from the 'Variety/Gluten Free Dairy Free/Latino/Vegan' group were

satisfied with the food quantity compared to the 'Flavor Neutral/Renal/Heart Healthy' and 'Meat and Potatoes' group. Statistical significance was found between the difference in meal plan groups, with a p-value of 0.03. Clients receiving different meal plans reported different levels of satisfaction with quality of food. A higher percentage of clients from the 'Flavor Neutral/Renal/Heart Healthy' were more satisfied compared to the 'Meat and Potatoes' and 'Variety/Gluten Free Dairy Free/Latino/Vegan' group.

Clients with different chronic diseases reported different levels of satisfaction with food quantity. A higher percentage of clients with cancer were satisfied with the quantity of food compared to those in the 'MS/ALS/Other' and 'HIV/AIDS' groups. Clients also reported various levels of satisfaction with quality of food. A higher percentage of clients in the 'MS/ALS/Other' group were more satisfied compared to the 'Cancer' and 'HIV/AIDS' group.

Additional analyses examined the relationship between age, gender, race and ethnicity. There were slight differences in satisfaction of food quality and quantity between groups, with some showing statistical significance.

Areas of improvement include client education about which meal plan they are receiving and education about free of charge appointments available with the dietitian. Additionally, low levels of consumption of some brown bag items versus others also needs to be examined. Open Arms will utilize the results to make data-driven changes to increase client satisfaction.

Introduction

Open Arms of Minnesota is a nonprofit organization that prepares and delivers more than 600,000 meals a year to clients who have cancer, HIV/AIDS, ALS, or Multiple Sclerosis and their dependents and caregivers. Open Arms utilized more than 7,300 volunteers in 2017. Their mission statement is “With open arms, we nourish body, mind and soul”.

Research has proven that chronic disease has many negative impacts to one’s life, including poverty, food insecurity, decreased medication adherence, increased healthcare costs, and decreased quality of life. Organizations like Open Arms of Minnesota have proven the benefits medically tailored meals have on the outcomes of chronically ill patients. More research needs to be done to better justify the efforts and success of these public health organizations. Open Arms has been collecting client satisfaction surveys for the past several years and the analyses of such data can provide information needed for the organization to make changes in their operation to improve program implementation and increase client satisfaction.

Importance of the Project

Open Arms of Minnesota was established in 1986 by founder, Bill Rowe, when he started cooking meals for a few men with HIV/AIDS who couldn’t cook for themselves due to their health. Today, Open Arms delivers more than 600,000 meals a year to clients who have cancer, HIV/AIDS, ALS, or Multiple Sclerosis and their dependents and caregivers. The organization is a non-profit organization that utilized more than 7,300 volunteers in 2017 who cooked, prepared, delivered meals, worked in the Open Arms gardens, and took part in various fundraising events (Open Arms of MN, 2017).

Public health researchers have proven how crucial medically tailored meals are to those fighting chronic disease. Seven out of ten Americans die from chronic disease each year, (CDC, 2012), and each year, Medicaid, Medicare, and other government programs in the United States spend billions of dollars treating end-stage chronic disease (ANSA, 2006). By the middle of this century, expenditures will reach \$6 trillion from treating chronic disease in the US alone (DeVol, et al., 2007). Proper diet can improve health status and decrease chronic disease healthcare expenditures by providing the body essential nutrients needed to control disease and increase treatment effectiveness (ANSA, 2006). However, access to nutritious food is a major barrier to many with chronic disease due to poverty, lack of community resources, and poor health (ANSA, 2006). Organizations such as Open Arms of MN exist to supply clients fighting disease with nutritionally modified meals that are designed to give their bodies nutrients needed to maintain their quality of life.

By analyzing the survey data, this study will help Open Arms to understand the preference, needs, and benefits of the meal service program and make improvements in the future.

Objectives

The benefits of the Open Arms meal service need to be examined to ensure client satisfaction and showcase improved health outcomes for the chronically ill. By analyzing the survey data, this study will help Open Arms to understand the preference, needs, and benefits of the meal service program and make improvements in the future.

Literature Review

Chronic diseases such as Multiple Sclerosis, cancer, HIV/AIDS and ALS many times leave individuals incapable of caring for themselves, leading to a snowball effect of worsening health conditions, poverty, food insecurity, malnutrition, non-compliance of medication, and increased healthcare costs (ANSA, 2006). According to the Centers for Disease Control and Prevention, half of the US population had at least one chronic disease in 2005 (CDC, 2012), leaving 25% of those with at least one daily limitation (Anderson, et al., 2004). Treatment for chronic disease comes at a hefty price, costing the US economy over \$1 trillion each year (DeVol, et al., 2007). While some individuals can manage their chronic diseases themselves or with their support system, many cannot, and they can fall through the cracks of public health programs for one reason or another.

The importance of proper nutrition for individuals with chronic disease has been widely shown in the public health community (Keithley, et al., 2000; Marín Caro, 2007). It is evident that nutrition education and healthy food access increases food security, medication adherence, quality and quantity of life, and decreases healthcare expenditures for those fighting chronic disease (ANSA, 2006). Many organizations around the country are determined to provide more quantitative evidence on the successes of public health nutrition services for chronically ill populations. The Food Is Medicine Coalition (FIMC), previously known as the Association of Nutrition Services Agencies (ANSA), consists of roughly 30 organizations that provide millions of meals to people living with HIV/AIDS and other chronic diseases (ANSA, 2006). To support these organizations' efforts, FIMC is driven to prove the cost effectiveness of nutrition programs for the chronically ill on the US economy.

A 2006 report produced by the ANSA analyzed the cost effectiveness of nutrition programs on HIV/AIDS and type 2 diabetes, with hopes to offer new ways for nutrition program organizations to measure success. Thirteen organizations were selected to complete a survey focused on programs' costs and services (ANSA, 2006). The participating organizations selected were required to deliver freshly prepared meals, have a registered dietician design the meals, and have the meals nutritionally tailored to certain chronic diseases (ANSA, 2006). The average cost for an organization to produce freshly made food for one person per year in 2003 was \$1,507, including cost of food and program administration. This was compared to the average cost of \$4,574 per day for persons admitted for HIV/AIDS complications in 2003 (ANSA, 2006). The ANSA argues that if a nutrition program could prevent even one day of hospitalization, it would save \$3,067 per person each year in 2003 dollars (ANSA, 2006).

Metropolitan Area Neighborhood Nutrition Alliance (MANNA) is a nonprofit organization in Philadelphia that also prepares and delivers fresh meals to chronically ill clients (Gurvey et al., 2013). They did a three- month comparison of healthcare costs between 65 chronically ill Medicaid recipients who are not MANNA clients and 65 new MANNA clients who were also Medicaid recipients. What they found was that healthcare costs decreased significantly for three consecutive months after the start of receiving meals from MANNA (Gurvey et al., 2013). The average monthly healthcare expenses for non-MANNA Medicaid recipients was roughly \$41,000, compared to \$28,000 for MANNA clients (Gurvey et al., 2013). Additionally, the cost, frequency and duration of hospital stays was lower for MANNA clients. For these clients, the yearly cost of hospital stays was \$132,000 per year, compared to non-MANNA clients price of \$220,000 (Gurvey et al., 2013). Lastly, a year after clients started

receiving MANNA services, researchers found that 93% of clients who were hospitalized were discharged to their homes, compared to 72% of the non-MANNA clients who were discharged to an acute care clinic (Gurvey et al., 2013).

Decreased medical expenditures for clients of such public health programs are the result of several other positive outcomes from medically tailored meals. Several studies have shown that when clients have nutritious food available to them it improves their physical, mental, and emotional wellbeing (Bauer, 2005; Gurvey et al., 2013; Palar et al., 2017; Topping, 1995).

Project Open Hand in San Francisco is another public health program that was analyzed by researchers looking at the benefits of medically tailored meals for individuals with HIV/AIDS and Type 2 Diabetes. Over the six-month study, researchers found an increase in medication adherence for individuals with HIV/AIDS, increased diabetes self-management, increased fruit and vegetable intake, increased food security, decreased depressive symptoms, decreased binge drinking, and decreased fat and sugar intake in clients with Type 2 Diabetes (Palar et al, 2017).

Community Servings, the non-profit organization in Massachusetts, surveyed healthcare workers who referred clients to Community Servings who have HIV/AIDS, cancer or Diabetes. The results of the survey concluded that there were four major ways the delivered meals impacted the clients. This included improved psychosocial wellbeing, healthy weight promotion, provision of high-quality, holistic care and adherence to medications and treatments (Cohn & Waters, 2013). When surveyors asked the respondents about the success of the program, 95.6% said they believed the medically tailored meals helped “a lot” or “some”

(Cohn & Waters, 2013). Finally, 100% of healthcare workers were either “very likely” or “fairly likely” “to refer their clients to Community Servings in the future.” (Cohn & Waters, 2013).

There is a large body of research showing the positive effects such organizations have on public health. It is important that Open Arms of Minnesota also showcase the benefits clients have gained from a result of receiving medically tailored meals. This information adds to the growing body of research promoting the work on these non-profit organizations.

Methods

Research Question

In what areas are clients of Open Arms of Minnesota satisfied with their service, and what improvements need to be made to achieve optimal program success?

Study design

This is a cross-sectional survey study. The survey is anonymous and was available online and on paper. There was an incentive to complete the survey by holding a drawing for a gift card. There was no penalty for not returning the survey.

Study Population

The survey was given to all of the 619 primary clients who were on service as of July 1, 2017. There was a total of 290 respondents, resulting in a 47% response rate. Individuals must have either ALS, Cancer, HIV/AIDS or MS to become clients. Individuals with other chronic conditions may be considered on a case by case basis. . Individuals must have a referral from a

medical provider or social worker to be considered for service. There is no income requirement to become a client.

Data Collection Methods

The survey was created on Survey Monkey in early July, 2017. A copy of the survey can be found in Appendix A. Surveys submitted up to two months after handout were included in the study. Clients either filled out the survey online or on paper. Paper responses were manually entered into Survey Monkey.

There are several categories of questions within the survey, all of which work to gain a solid understanding of client satisfaction. The following sections are about (1) client characteristics, (2) quality and quantity of food, (3) Open Arms staff and volunteers' satisfaction, (4) meal effectiveness, and (5) client resources. One major goal to be achieved with the Open Arms Client Satisfaction Survey is to examine the benefits of medically tailored meals to clients' health and wellbeing over time. Another is to better tailor meals to clients' preferences. A third goal is to improve client-staff and client-volunteer relationships. A fourth goal is to increase client nutrition education, and in turn foster better health, and a final goal is to show how meals delivered to clients' dependents and caregivers has benefited them.

Statistical/Analytical Methods

Data was exported to Excel from Survey Monkey for a portion of the analysis. Statistical Package for the Social Sciences (SPSS) software was used as well. First, client satisfaction was examined by calculating percentage and means of individual questions in the five sections. The questions that gauge overall client satisfaction use categorical variables such as "Always"

“Sometimes” and “Never”, and therefore measures will be reported in percentages. Questions about (1) client characteristics, (2) food quality/quantity, (3) Satisfaction with Open Arms staff and volunteers, (4) effectiveness of meals, (5) resources were analyzed individually to gauge overall satisfaction independent of other variables. Appropriate graphs were created in Excel to easily interpret trends in overall client satisfaction.

Analysis of the relationship between different client factors and client satisfaction with food quality and quantity were performed. Two major areas of interest are examining the correlation between primary diagnosis versus overall satisfaction and between menu type versus overall satisfaction. This was achieved by cross tabulating either primary diagnoses or menu type with the answers from the types questions stated above. Analyses of the relationship between client satisfaction with food quality/quantity and age, gender, race and ethnicity were also conducted. In SPSS, values were coded for the categorical variables. Chi-squared tests were performed while using a p-value of 0.05 as a cut-off point. Diagnosis groups were grouped into three diagnosis categories for analysis: HIV/AIDS, Cancer, and Other. The “Other” category contained MS, ALS, and other diagnosis not specified on the survey. Meal plans were grouped into 3 categories including Meat and Potatoes, Flavor Neutral/Renal/Heart Healthy, and Variety/Gluten Free Dairy Free/Latino/Vegan for comparison.

Expected Program Development Recommendations

Results of preliminary analyses have been reviewed by the Open Arms Senior Director of Programs, April Bogard, and the Open Arms Planning Committee for in-depth feedback and direction into additional analysis. More in-depth analysis took place as a service learning activity, examining specific findings for greater understanding of trends in client satisfaction.

Survey results will be used to analyze specific findings and create solutions to increase client satisfaction.

Results

Client Characteristics

There was a total of 290 respondents that completed the survey, leading to a 47% response rate. Table 1 below contains key summary data. The breakdown of clients includes 126 Cancer, 88 HIV/AIDS, 51 MS, 9 ALS and 15 clients with another chronic disease. A little over half of respondents were females. A great majority of clients are non-Hispanic white, followed by non-Hispanic black, Hispanic, Hispanic white and Hispanic black. The vast majority of clients are between ages 55-65 (34%) and 65 and older (31%). Other clients are between the ages of 45-55, 25-45 and 18-25, respectively. There are eight meal plans clients can choose from. The most popular is the Meat and Potatoes plan, with 43% of clients choosing this option. The Variety option is the second most popular choice, with 15% of the population eating this meal type. Unfortunately, 22% of the survey respondents didn't know what type of meal plan they are on. This is a growth opportunity the staff can address.

The survey responses on length of meal services, days of services, and number of entrees per week were also examined but not included in table 1. Length of meal service ranges from '0-6 months' and up through 'more than five years'. Volunteers deliver meals during the week days between 11:00 am and 2:00 pm. Clients who live outside of the delivery route or who can't have their meals delivered can pick up their meals at Open Arms during business hours. Each day has a designated delivery route, and there are varying numbers of clients

depending on the geographic area. Clients get to choose how many entrees they want to receive each week, along with items in the brown bag, a box of cereal and a half gallon of milk.

Interestingly, there is quite an even distribution of clients for different lengths of meal service. Twenty-seven percent of clients have been on meal service for 0-6 months, 15% for 6-12 months, 23% for 1-2 years, 19% for 2-5 years and 16% for more than five years. Thursday is the busiest delivery day, with 24% of meals being delivered, followed by Wednesday, Tuesday, Monday and Friday. Most clients receive five entrees each week (54%). Thirty-three percent receive 3-4 entrees, 9% receive 1 or 2 entrees, and 4% don't receive any entrees. This information was not included in table 1.

Table 1. Client Characteristics

Primary Diagnosis	Percentage of Clients (n=289)
ALS	3%
Cancer	44%
HIV/AIDS	30%
MS	18%
Other	5%
Gender	Percentage of Clients (n=285)
Female	54%
Male	46%
Ethnicity/Race	Percentage of Clients (n=230)
Non-Hispanic White	63%
Non-Hispanic Black	12%
Non-Hispanic Other	7%
Hispanic	4%
Hispanic White	1%
Hispanic Black	<1%
Hispanic Other	<1%
Age	Percentage of Clients (n=288)
18-25	< 1%
25-45	11%
45-55	23%
55-65	34%
65 and Older	32%
Meal Plan Type	Percentage of Clients
Vegan/GFDF/Latino/Vegan	(n=54)
Variety	15%
Vegan	2%
GFDF	2%
Latino	1%
Flavor Neutral/Renal/Heart Healthy	(n=38)
Flavor Neutral	3%
Renal	1%
Heart Healthy	10%
Meat and Potatoes	(n=116)
Meat and Potatoes	44%
Don't Know	(n=59)
Don't Know	22%

Food Quality/Quantity

Food Quality

An important aspect of the survey is the overall quality of food provided. Results can be seen in table 2 below. The results were very impressive, with the vast majority of respondents saying the quality of food is either “excellent” or “very good” and less than 1% saying the food quality is “poor”.

To gauge clients’ opinion of the food they receive from Open Arms, there is a section in the survey which includes 10 questions relating to food quality. Questions assess clients’ satisfaction with how the food smells, looks, tastes, is cooked, whether it’s too hot/spicy or salty, whether there is enough variety, if it matches their cultural/personal preferences, if it matches their health care provider’s recommendations, and if they read ingredient labels. The consensus was that 89% of the clients “usually/always” agreed to the above statements with the exception of the two questions regarding hot/spiciness or saltiness of the food. Most clients chose “never” for these two questions, matching the overall theme of satisfaction with food quality. Results were not included in table 2.

Food Quantity

Another important aspect is the overall quantity of food provided. Most respondents (73%) said, “There is just the right amount of food” while the remaining thought there was either too little or too much food provided.

Table 2. Overall Quality and Quantity of Food.

Quality of Food
Excellent
Very Good
Good
Fair
Poor
Quantity of Food
There is just the right amount of food

Brown Bag Items Ranking

Along with entrees, clients also receive a brown paper bag filled with nutritious food items. Items in the brown bag include a green salad, soup, sandwich, dessert, baguette, apple, orange, banana, other seasonal fruit, cheese stick, and hard-boiled egg. The survey asked clients whether they “always” “sometimes” or “never” eat each of the items. Most clients “always” eat each of the items. Seventy four percent “always” eat the green salad, 57% “always” eat the deli salad, 45% “always” eat the soup, 74% “always” eat the sandwich, 78% “always” eat the dessert, 54% “always” eat the baguette, 64% “always” eat the apples, 64% “always” eat the oranges, 77% “always” eat the bananas, 62% “always” eat the other fruit, 79% “always” eat the string cheese, and 67% “always” eat the hard-boiled egg. Some food items aren’t consumed as much as others. This may be a growth opportunity for the staff to address.

Clients were also asked which of the brown bag items are their favorite and least favorite. By far, the most favorite item was the dessert (34%), followed by the sandwich (19%) and the fruit (15%). When asked what brown bag items were their least favorite, the top three least favorite items were the soup (17%), fruit (16%), and deli salad (13%).

Entrees Ranking

The next portion of the survey contained open-ended questions regarding clients' favorite and least favorite entrees. The top 20 favorite and least favorite are recorded in the appendix below. The top five favorite entrees include lasagna, chicken, fish, spaghetti and meatloaf. The top five least favorite entrees include any type of stew, breakfast/French toast, fish and soup. Interestingly, there were several entrees that appeared on both the favorite and least favorite lists, showing that everyone has a personal preference unique to them.

Staff and Volunteer Delivery Driver Satisfaction

Client satisfaction with staff and volunteer delivery drivers was assessed to ensure operations at Open Arms run smoothly. Five questions assessed staff performance and five assessed volunteer delivery drivers. The overall satisfaction level of staff and volunteers was assessed based on the percentage of clients' responses of "Always" "Sometimes" or "Never" to the five questions within the staff and volunteers section of questions. There were no "Never" responses, therefore that category is excluded from table 3 below.

Satisfaction with Staff

The statements regarding Open Arms staff include "Staff listen to me" "Staff care about me" "Staff are easy to reach by phone" "Staff want to hear my questions and concerns" and

“Staff give me the information I need”. Results for individual categories can be seen in table 3 below.

There is an overall high satisfaction rate for each statement, with the average 91% of respondents choosing “Always” for each statement. However, one area of improvement could focus on staff being easy to reach by phone. This question received the most “Sometimes” responses, with 18% response rate versus the average of 10%. This may be a growth opportunity for the staff.

Table 3. Satisfaction with Staff and Volunteers

Questions About Staff (n=251)	Always	Sometimes
Staff Listen to Me	91%	9%
Staff Care About Me	93%	7%
Staff Easy to Reach by Phone	84%	16%
Staff Want to Hear my Questions and Concerns	92%	8%
Staff Give Me the Information I Need	93%	7%
Questions About Volunteer Drivers (n=253)	Always	Sometimes
Volunteers Are Friendly	95%	5%
Volunteers Care About Me	91%	9%
Volunteers Listen To Me	91%	9%
Volunteers Are On Time	89%	11%
Volunteers Provide Good Customer Service	94%	6%

Satisfaction with Volunteer Delivery Drivers

The questions regarding Open Arms volunteer delivery drivers asked clients to rate each statement as “Always” “Sometimes” or “Never”. The statements were, “Volunteer delivery drivers are friendly”, “Volunteer delivery drivers care about me”, “Volunteer delivery drivers listen to me”, “Volunteer delivery drivers are on time” and “Volunteer delivery drivers provide good customer service”. Results of individual categories can be seen in table 3 above.

There is an overall high level of satisfaction with the volunteer delivery drivers, with 92% of respondents “Always” agreeing with the above statements. One area of improvement however, could be the timeliness of volunteers. Only 89% of respondents said their meals were delivered on time. This area could be explored further to assess how late volunteers have arrived or the clients’ knowledge of delivery hours. The results of volunteer satisfaction can be seen in table 3 above.

Effectiveness of Meals

The next category of questions analyzed how the Open Arms meals have made a difference in clients’ overall health. There were fourteen questions regarding the impact meals made such as, “Eating the right foods helps me manage the side effects of my medications or treatment”, “Receiving meals from Open Arms helps me eat healthier foods”, and “Food from Open Arms helps me stay out of the hospital”. The average for each response can be seen in table 4 below. One observation to note is that the statement with the fewest number of respondents answering “Yes” was the statement, “Open Arms has helped me increase my knowledge about nutrition related to my condition”. The average response was 84% “Yes”. This is slightly concerning, and an opportunity for growth, however nutrition education comes secondary to making sure clients are well-nourished and staying healthy. Overall, the satisfaction rate was very high from respondents, proving that the food they are receiving is beneficial.

Table 4. Effectiveness of Meals

Meal Effectiveness Questions (n=234)	% Yes
The meals I eat make a difference in maintaining my health	99%
Eating the right foods helps me manage the side effects of my medication or treatment	95%
Regular Meals Help Me Take My Medications on Schedule	90%
Receiving meals from Open Arms helps me eat healthier foods	98%
Eating food from Open Arms helps me achieve or maintain a healthy weight	91%
Eating food from Open Arms helps me feel better	94%
Eating food from Open Arms helps me improve my energy level	91%
Food from Open Arms helps me continue to live at home	90%
Food from Open Arms helps me stay out of the hospital	89%
Food from Open Arms helps me maintain my independence	97%
The food I get from Open Arms provides comfort in my day	96%
I feel a sense of community with open Arms staff and volunteers	95%
The food I get from Open Arms decreases my stress	92%
Open Arms has helped increase my knowledge about nutrition related to my condition	81%

Resources

The next category of questions analyzed clients' resources and effectiveness of home delivered meals. These questions help to show the importance of Open Arms meals. For example, 53% of respondents reported not having "enough money or food assistance/food stamps/SNAP to buy the food" they need. This is an alarming statistic however, it is fortunate that Open Arms can increase food security for its clients. Another question asked, "In general, would you say that home-delivered meals from Open Arms have helped you?" The response was overwhelming, with 98% of respondents saying "Yes". You can see the other results in table 6 below.

Table 5. Client Resources

Client Resources Questions (n=)
Do you always have enough money or food assistance to buy the food you need?
During the past month, did you have to choose between buying medication?
On one or more days during the past month, did you choose between buying food or paying your rent/utility bill?
On one or more days during the past month, did you

Children and Caregiver meal satisfaction

The next category of questions asked about children and caregiver meal satisfaction. Clients who have dependent children and/or caregivers can request meals for them as well. This takes pressure off of the client and their family during a stressful time in their lives while dealing with chronic disease. Only 14% of clients' children receive meals from Open Arms currently. Of those that do, 100% of clients reported that receiving food for their children decreases stress. Also 100% of the children reportedly like the food they receive. Twenty-nine percent of clients who have caregivers receive meals for them. Of those clients, 100% reported that providing meals for their caregiver decreases their own stress. Additionally, 100% of the caregivers like the food they receive.

Relationship Between Client Satisfaction and Primary Diagnosis, Meal Plan Type, Client

Demographics and Meal Effectiveness

Chi-squared analysis was performed to compare overall client satisfaction with food quality and food quantity across meal plan types and clients with different primary diagnosis groups. Food quality was ranked as either 'Poor', 'Fair' or 'Good' versus 'Very Good' and 'Excellent'. Food quantity was ranked as either 'Too much or too little food' or 'Just the right amount'. In table 6 below, 'satisfaction' with food quality and quantity represents the responses of 'Excellent/Very Good' and 'Just the Right Amount of Food' for the corresponding variables. The feedback from Open Arms clients was very positive, thus we performed chi-squared analysis focusing on the percentage of clients who reported the services were 'excellent' or 'very good' because of the low numbers of unsatisfied responses for many questions.

Among the different meal plan groups, 88% of those in the 'flavor neutral/renal/heart healthy' group reported the food quality was 'excellent' or 'very good', while 82% of those in the 'meat and potatoes' group, 77% in the 'variety/gluten free dairy free/Latino/vegan' and 74% of those who don't know their meal plan reported the food quality was 'excellent' or 'very good'. For quality of food, it was concluded that there is no statistical significance between meal plan type and overall quality of food ($p=0.513$).

Among the different meal plan groups, 82% of those in the 'meat and potato' group reported satisfaction with the quantity of food, while 77% of those in the 'variety/gluten free dairy free/Latino/vegan' group, 88% of those in the 'flavor neutral/renal/heart healthy' group and 71% who didn't know their meal plan reported satisfaction with quantity of food. For

quantity of food, it was concluded that there is statistical significance between meal plan type and satisfaction with quantity of food ($p=0.03$).

Among the different primary diagnoses, 85% in the 'MS/ALS/Other' group reported the food quality was 'excellent' or 'very good', while 80% of those in the 'Cancer' group and 75% in the 'HIV/AIDS' group reported the food quality was 'excellent' or 'very good'. For quality of food, it was concluded that there is no statistical significance between meal plan type and overall quality of food ($p=0.489$).

Among the different primary diagnosis, 79% of those in the 'Cancer' group reported satisfaction with the quantity of food, while 74% of those in the 'MS/ALS/Other' group and 68% of those in the 'HIV/AIDS' group reported satisfaction with the quantity of food. For quantity of food, it was concluded that there is statistical significance between primary diagnosis and satisfaction with quantity of food ($p=0.377$).

Table 6. Client satisfaction by meal plan, diagnosis, gender, age, race, ethnicity, meal effectiveness.

Meal Plan	Meat and Potatoes (n=80)	Variety/Gluten Free Dairy Free/Latino/Vegan (n=38)	Flavor Neutral/Renal/Heart Healthy (n=28)	Don't Know (n=40)	p-value for chi-squared test
Satisfaction with food quality	82%	77%	88%	74%	0.513
Satisfaction with food quantity	75%	89%	61%	71%	0.033
Diagnosis	HIV/AIDS (n=57)	Cancer (n=85)	MS/ALS/Other (n=43)		
Satisfaction with food quality	75%	80%	85%		0.489
Satisfaction with food quantity	68%	79%	74%		0.377
Gender	Female (n=131)	Male (n=114)			
Satisfaction with food quality	82%	77%			0.429
Satisfaction with food quantity	76%	68%			0.196
Age	25-45 (n=25)	45-65 (n=142)	65 and Older (n=78)		
Satisfaction with food quality	80%	79%	81%		0.989
Satisfaction with food quantity	84%	69%	76%		0.291
Race	White (n=182)	Black (n=47)	Other (n=16)		
Satisfaction with food quality	81%	79%	63%		0.199
Satisfaction with food quantity	75%	68%	56%		0.193
Ethnicity	Hispanic (n=11)	Non-Hispanic (n=219)	No Answer (n=62)		
Satisfaction with food quality	100%	79%	79%		0.593
Satisfaction with food quantity	75%	73%	70%		0.894

Additional analysis was performed with variables including gender, age, race and ethnicity to see if there was any relationship between them and satisfaction with food quality and quantity.

Among the females, 82% reported the food quality was 'excellent' or 'very good' versus 77% of males. Among the females, 76% reported satisfaction with the quantity of food versus 68% of men. For quality and quantity of food, there was no statistical significance between females and males ($p=0.429$) ($p=0.196$).

Among the different age groups, 81% of the '65 and older' group reported food quality was 'excellent' or 'very good', while 80% of the '25-45' group and 79% of the '45-65' group reported the food quality was 'excellent' or 'very good'. For quality of food, it was reported that there was no statistical significance between age group and satisfaction with food quality ($p=0.989$).

Among different age groups, 84% of the '25-45' group reported satisfaction with food quantity, while 76% of the '65 and older' group and 69% of the '25-45' group reported satisfaction with the quantity of food. For quantity of food, it was concluded that there is statistical significance between age and satisfaction ($p=0.291$).

Results on Additional Service Learning Analysis

Additional analysis was performed with April Bogard's request in order to provide specific results the Open Arms Committee will use in the future for quality improvement, marketing and grant proposals. This included organizing open-ended responses about the overall program and about the food itself. There were several categories of responses including

topics such as variety, portion sizes, thank-you's, caregiver/children/new client requests, menu types, fruit and vegetables, nutritional requests, hard boiled eggs, packaging, pets, Food Fare (voucher program for groceries), delivery requests, soups/stews, milk/juice, spices/seasonings, breakfast, and suggestions/requests. The feedback received is extremely valuable information, and reoccurring themes in suggestions will be considered to improve the program.

The ranking of entrées was also calculated in order to see which meals clients look forward to and which ones should be improved or removed from the menus. The top 20 favorite and least favorite entrees were categorized. The top five favorite entrees are lasagna, chicken entrees, fish, and spaghetti. The top five least favorite entrees are stew, breakfast/French toast, fish and soup. Surprisingly there were many responses that ended up on both the top 20 favorite and least favorite entrees. This shows how personal taste varies a great deal among clients. Bar graphs were made for easy interpretation of the data and will be used for future meal planning.

Brown bag items were also ranked from favorite to least favorite. The top five favorite items include dessert, sandwich, fruit, green salad, and deli salad. The top five least favorite items include soup, fruit, deli salad, baguette, and dessert. It is surprising to see such discrepancy in answers because many of the items appeared on both favorite and least favorite categories. One example of an area for improvement is that there were several suggestions within the brown bag ranking question and open-ended questions that clients do not like the sweet potato sandwich. This is extremely valuable information and shows how important surveying clients is. This discovery would probably never been made without the distribution of the survey.

Separate comparisons of client satisfaction with staff and volunteer delivery drivers based on primary diagnosis and delivery day was also performed. The overall satisfaction of staff regarding primary diagnosis was calculated, showing 89% of clients “Always” agreed, 10% “Sometimes” agreed and 1% “Never” agreed with the statements about staff satisfaction. The one interesting trend was that respondents with HIV/AIDS were more likely to “Sometimes” agree to the statements, versus “Always”. This could be attributed to social determinants of health for the type of diagnosis. This will be further discussed below. One area of improvement could focus on staff being easy to reach by phone. This question received the most “Sometimes” responses, with 18% response rate versus the average of 10%.

Comparison of staff performance by delivery day was also performed. The overall satisfaction included 90% of clients that “Always” agreed, 10% “Sometimes” and 0% “Never” agreed to the above statements. Overall, there was a fairly even distribution of responses based on delivery day. One finding however, shows that staff are not always easy to reach by phone. This may be a growth opportunity for the staff.

Comparison of delivery drivers was also performed separately for delivery day and diagnosis as well. The overall satisfaction included 92% of clients that “Always” agreed, 8% that “Sometimes” agreed and 0% that “Never” agreed to the above statements. Overall, there was a fairly even distribution of responses based on delivery day. One important observation to make that is skewing the average satisfaction level is the response from “Hold” Clients. These clients don’t have their meals delivered, and actually pick theirs up from Open Arms. The data shows that they are more likely to answer “Sometimes” to the questions, even though they don’t

necessarily pertain to “Hold” clients. In hindsight, this section of questions should have had an option for “Hold” clients to choose, “NA” or “I pick up my meals from Open Arms”.

Comparison of delivery drivers by primary diagnosis was also performed. The overall satisfaction included 93% of clients “Always” agreed, 7% that “Sometimes” agreed, and 0% that “Never” agreed. The one interesting trend was that respondents with HIV/AIDS were more likely to “Sometimes” agree to the statements, versus “Always”. This could be attributed to social determinants of health for the type of diagnosis. This will be further discussed below.

Discussion

There is a lot of data that was analyzed using the client survey results. We were fortunate enough to have an acceptable response rate, at 47%, leading to an accurate representation of the population. Throughout the analysis several important discoveries were made that could use further investigation to improve the meal plan service. There were also several reoccurring themes within the quality of food, especially within the open-ended questions. Overall, there was extremely positive feedback, and it is evident that Open Arms clients are satisfied with the meal service they are provided.

Looking at the survey results above, one area for improvement is the 22% of respondents who don’t know what meal plan they are receiving. This is alarming because some clients may have nutritional requirements or dietary restrictions. If they don’t know what is in the food they are eating, this could cause major health issues and added anxiety. An interesting point, however is that entrees are delivered in plastic bags that are color coordinated to their menu type. For instance, the meat and potatoes menu is delivered in red bags. This information

is given to clients when they first sign up of service. One interesting point made by April Bogard is that some clients may not be concerned with what meal plan they are on, therefore don't know. They may just be happy that they are getting free, nutritious meals. Another possibility for this high of a percentage is that some clients have caregivers who take care of the meals and sign them up for service, so clients may not be aware of what meal plan type they have.

As a side observation to some clients not knowing their meal plan type, the open-ended responses led to a number of individuals requesting that their meal plan be switched. The responses provided alluded to clients being unaware that they can switch meal plan type at any time. Staff welcome clients to voice their opinion about the meals and are happy to provide them with the menu type that suits them. Staff do tell clients they can switch menu types at any time while performing intake duties with new clients. This may also be an opportunity for growth, leading to staff reiterating to clients throughout the year that menu changes are welcomed.

A significant statistic that should be embraced by Open Arms is that 97% of clients are satisfied with the quality of food (40% excellent, 41% very good, 16% good). It is extremely difficult for a non-profit that relies on volunteers to provide hundreds of clients a week's worth of healthy meals that meet nutritional requirements for those fighting chronic disease, let alone have the meals be delicious. Open Arms staff and volunteers should be proud of the work they do.

It is interesting to see the brown bag items and entrée rankings because it shows how personal preference comes into play, and how different clients' tastes can be. There were

several items on both rankings that appeared on the favorite and least favorite lists. This information makes it difficult for program managers because it shows that some are and some aren't happy with certain foods. If you take those foods away that some people love, they will get mad. If you leave those foods on that some don't like, they may grow tiresome of the food. However, this is very valuable information because it shows that if so many people love certain entrees, the staff is obviously doing something right. Additionally, information about least favorite meals can show how important it is for reiterating to clients that they can change menus if they aren't satisfied.

It is not surprising that 93% of respondents agreed that the meals provided are effective at maintaining a healthy life. This aligns with the 97% of the respondents who were satisfied with the quality of the food. These two aspects go hand-in-hand because if they like the food they are eating, knowing it is healthy, they are also likely to agree that it helps them maintain a healthy life. As mentioned above, one area for improvement would be increasing nutrition education for specific diagnosis in clients. Open Arms has a full-time dietician on staff that already provides client education, however some clients may not know about this service. More transparency about the availability of the dietician and nutrition resources may be helpful.

The resources section of the survey provided some startling insight into the struggles clients face just to have enough food to fight chronic disease. The first four questions in table 5 show that too much of the population is food insecure. It also proves how important the service that Open Arms provides is. An astounding 98% of clients said that overall, Open Arms services has helped them. This is an extremely remarkable achievement.

One area of improvement within the resources section that ties in with the meal effectiveness section is the lack of knowledge about nutritional resources available to clients. Only 58% of clients knew they could receive nutritional counseling at no-charge with the dietitian at Open Arms. This could be resolved with a simple handout explaining this available service.

The chi-squared analysis performed was a great learning experience for me and required more in-depth analysis skills that challenge me. I have not used SPSS since the required biostatistics course a few semesters ago. This was a great opportunity for me to relearn components of biostatistics and the SPSS software. With that being said, due to the high rates of positive feedback from clients, it made conducting the chi-squared analysis difficult. I analyzed many questions before concluding there wasn't much statistical significance due to the low numbers of unsatisfied clients. This was a very time-intensive process that taught me a great deal. I actually started off working with SAS software, however I found it is less user friendly than SPSS and made the switch to SPSS.

The additional analysis I performed for service learning hours was time intensive yet a very important portion of the survey results. The open-ended questions about quality provide some of the most valuable information that isn't discussed in the other sections of the survey. In order to effectively disseminate the open-ended responses, it was helpful to categorize responses so none are overlooked and they are easy to find. These responses will be valuable pieces of future marketing and fundraising events. The open-ended responses about favorite brown bag items and entrees is also extremely valuable, as mentioned above.

An interesting discovery was made within the staff and volunteer delivery drivers satisfaction portion of analysis that showed HIV/AIDS clients being overall less satisfied. This was slightly evident in other sections of the survey, however it was more pronounced here. I mentioned this to April and she explained this could be due to social determinants of health. There are many factors in individuals' lives that affect their health status and position in society. For example, Open Arms tracks the type of housing clients live in, and it is known that clients with HIV/AIDS are more likely to have unstable housing or be homeless than other diagnosis. Because of this, they may not have as strong of support system as other clients, leading to lower satisfaction with different aspects of life. Low income and poor housing can also affect health in a negative way, which can alter one's outlook as well. This discovery reiterated many lessons learned throughout the courses I have taken at UNMC.

This analysis is based on information provided by respondents of the survey. The results and the conclusions were based on the assumption that the respondents are representative of the clientele base on the Open Arms. We did not have information to test this assumption and this is a study limitation.

Recommendations

Contributions to Public Policy

As mentioned above, several studies have shown that when clients have nutritious food available to them it improves their physical, mental, and emotional wellbeing while fighting chronic disease (Bauer, 2005; Gurvey et al., 2013; Palar et al., 2017; Topping, 1995). There is a large body of research showing the positive effects such organizations have on public health. It

is important that Open Arms of Minnesota also showcase the benefits clients have gained from a result of receiving medically tailored meals. This information adds to the growing body of research promoting the work on these non-profit organizations. It also showcases how successful Open Arms has been, holding similar organizations to a higher standard.

Suggestions for Future Projects

There are many questions in this survey that provided extremely valuable information. While I spent a few hundred hours on data analysis, so much more can be done. Depending on the interest of the person conducting the analysis, many various aspects could still be analyzed. For the chi-squared portion of analysis, the variables I focused on for this project were primary diagnosis and delivery day versus overall satisfaction. It would be interesting to see the correlation between other variables as well, such as length of service versus satisfaction. Meal effectiveness would also be an appropriate variable to analyze in addition to primary diagnosis and meal plan type.

Conclusions

Analysis of the 2017 Open Arms Client Satisfaction Survey has provided extremely important insight into the level of satisfaction clients have and what could be improved upon to increase satisfaction with the service even more. Annual surveys will continue to be distributed and analyzed, as a means to continuous improvement within the organization. It is exciting to see how successful Open Arms has become and to think about how success of the organization will launch them through the coming years.

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Service Learning/Capstone Experience Reflection

For the first 75 hours, much of the time was spent doing client satisfaction survey data entry, data cleaning, and analysis for my Capstone Experience. This included manually entering all the 290 completed surveys into Survey Monkey. This took up a sizable portion of my time, but it was necessary because it was crucial that I enter in survey results accurately and thoroughly so the data doesn't contain human errors. Once all the survey results were entered into Survey Monkey, I exported that data into an Excel document with the help of my preceptor, April Bogard. She explained that the data needs to be cleaned up so it is easier to analyze. She showed me the Excel document from the previous year's survey results and how she organized it (i.e. combining similar open-ended questions, compressing multiple answer questions into one column, etc.) My next phase of Capstone Experience hours started when I began to clean the data, organizing responses and making them uniform. This took several hours, to my surprise. After the data was cleaned, I started analysis, which included comparing different variables such as meal plan type versus overall satisfaction. Before this Capstone Experience, I had minimal experience with Excel. This project has greatly increased my understanding of Excel, especially with filtering all the columns of data and creating tables. There was a learning curve and I spent a few hours learning how to best clean the data. I accumulated some service learning hours by helping with the holiday meal that Open Arms delivers to clients. The tasks I did included entering in holiday meal requests for certain clients in ServTracker, the software Open Arms uses to track all client information, calling clients to remind them of their holiday meal delivery and helping in the kitchen to prepare for holiday meal deliveries. I also spent two afternoons delivering meals to clients. This was a rewarding experience and helped me to gain a full understanding of the work Open Arms does. It was nice to put into

perspective how the behind the scenes office work pays off when you deliver meals to such appreciative clients. Another Service Learning project I started during the 75-hour period involves using the Minnesota Department of Health website to determine if clients are eligible for the Minnesota CADI or Elderly Waiver program. These waivers are for disabled or elderly individuals who would benefit from home services that would keep them living at home instead of living in a healthcare facility. The reason behind the project is to see if Open Arms can get some additional funding through this government program to help pay for the cost of meals. I checked every clients' eligibility status and recorded if they are eligible for either waiver. This was an interesting project to see why some clients are eligible based on their diagnoses while others are not eligible. I have also gained more patience for data entry during this project. While it took several hours to go through every client to see if they're eligible, it is worth it because I found dozens of clients eligible for the waivers which will bring in additional funding that will help Open Arms grow and serve more clients.

During the 150-hour reporting period, I worked on various service learning/capstone experience projects. I continued working on the CADI/Elderly waiver Eligibility status document. I completed that at the end of January. That was a rewarding project to work on because I was able to find dozens of clients who are eligible for either the CADI or Elderly Waiver that we didn't know were. This will allow Open Arms to receive funding for meals for each of these clients, which will help with the cost of providing meals for everyone. I also continued working on data analysis in Excel for my capstone experience. I completed analysis using Excel and started using SAS for computing correlation coefficients for the variables I am interested in-primary diagnosis/meal plan type versus overall client satisfaction. I started researching how to use SAS so I could perform the

correlation analysis I need. I also did a few morning route preparation shifts which allowed me to get a better sense of what goes on each morning to make meal deliveries possible. I worked a few kitchen shifts, where I learned new tasks such as sandwich, salad, and dessert preparation for delivery. I also made a few meal deliveries. Lastly, I learned a new task that the client services department is responsible for. I learned how to do client intake entry, which consists of entering new client information into Serv-Tracker so the staff can contact the client and get them set up for meal delivery service.

One thing that was a little worrisome for me during the 150-hour period is that it was difficult for me to accumulate the number of service learning hours I needed each week to comfortably complete the hour requirement. This is because I have an hour and a half lunch break that I use for going to Open Arms to do service learning tasks a few times a week. Some weeks I could only make it one day a week, where others I might go almost every day. To help me accumulate hours more efficiently, I asked Aoife, the Client Services Manager who oversees my service learning tasks, if there was a project I could work on at home that would give me several hours of work. She was happy to give me a large project that involves cleaning up client referral information.

During the 225-hour reporting period I spent my time working on a few different service learning activities including entering in new client information into ServTracker and organizing a client referrer database that I can work on from home. Entering client info into ServTracker allowed me to gain a better understanding of the ServTracker software and to see the big picture of how an individual goes from being a potential client to them receiving meals. The new project I started involves a large excel document that has the names of all health care providers who refer

their patients to Open Arms. The excel doc has their addresses and contact information.

Unfortunately, there are duplicate names, missing addresses, and discrepancies in how their information has been organized. I have been going through and deleting any duplicate providers, finding missing contact information and addresses, and creating a uniform system that prevents duplicate names from appearing. For my Capstone Experience, I recoded the variables I am using for the Chi-squared analysis and then spent a lot of time researching how to use SAS for calculating Chi-squared. The results I came up with using SAS weren't accurate, and after talking with my committee, I decided to use SPSS instead since that is what I used during my biostatistics course. I switched to SPSS and took some time refreshing my memory on how to use it. I then did Chi-squared analysis for many different sets of variables and had to recode some of them to make the results more accurate because of the small cell size for some of the categories in each variable. I then started drafting my final report and am continuing to do so.

During my 300-hour reporting period, I worked on my final paper, met with my committee members about the edits that need made on two different occasions, made revisions and sought out feedback again. I also continued work on the client referral database until completion I created my Power Point presentation and met with both Dr. Wang and April Bogard to review it. I practiced my presentation several times before my official presentation.

What did you learn about the organization?

I learned that Open Arms has a very committed, close-knit staff that loves working to help their clients. All of the staff are very warm and inviting, and I feel that this is because they love the work they do. It is also evident that all of the staff are so fortunate for the wonderful volunteers Open Arms has. Open Arms wouldn't be what it is without the volunteers. I have also noticed that

the staff are very patient and good at explaining day-to-day tasks because they do this on a regular basis for volunteers. I feel very invited and appreciated when I am there.

What resources, relationships, and skills permitted these activities to occur?

In order for me to do my SL/CE project I first had to find a service learning organization to do my project with. The required a lot of research on my half because I live in Minneapolis/St. Paul and did not have any suggestions for organizations. I then had to find the correct contacts at Open Arms to reach out to. This took some time because there was a staff transition and it took a few weeks to get ahold of anyone. Once I did establish a relationship with the Open Arms staff, I was able to explain my requirements and they said they could work with me. There was a lot of coordinating and brainstorming ideas before we decided what my service learning tasks would be and what I wanted to focus on for my capstone experience. Throughout my project with Open Arms, there was also a lot of drive time involved. Luckily, I have a long lunch break during the week, have been able to spend an hour or two a few days a week at Open Arms without altering my work schedule. The skills that I used the most for my project include communication and planning. It has proven to be difficult to effectively and timely communicate with everyone involved because my project is in addition to everyone else's workload, including my own. That is where planning is very important because I need to be up to date with when projects need to be completed in order for me to stay on track.

If a database was developed, what was the sustainability plan to continue tracking the data?

A client database that records CADI/Elderly Waiver eligibility status was created to find any clients who are eligible for those waivers that the staff did not know about. I was the one to check eligibility status for the clients. To continue tracking this data for future incoming clients,

new clients will need to be added to the database and manually searched within the Minnesota Department of Health's website like I did for the others. There should be an option to select the date range for new client entry that can be used to only find new patients that need to be checked on.

The client referral database that I organized will need to be periodically cleaned up again to eliminate duplicates, missing contact information and addresses. However, because I found missing information, reorganized, and saved the correct formatting for provider information, it will be easier for entering in provider information because when staff search for the provider, if the provider is already in the system, all of their information will be saved. This will keep things clean and prevent missing and duplicate information from occurring.

Related to your Service Learning activities, what do you think were your greatest contributions/accomplishments? What strengths did you bring into the project?

My greatest contribution during service learning activities would have to be finding a lot of clients who are eligible for waivers that the staff did not know about. This makes me feel good because I was able to find a way to save Open Arms money and potential help more clients who need it.

My strengths during the service learning activities I was involved in are my attention to detail, thoroughness and communication skills. I always want to make sure I am doing the task correctly, even if it means taking a little more time. I also like to take pride in knowing I did the best job I could. I pay attention to detail and don't like to rush over things. I also feel I am good at communicating and making sure everyone has the information they need about my projects.

What were the greatest challenges of your Service Learning/Capstone Experience? How did you address and overcome those challenges?

My greatest challenge was communicating with Open Arms staff because of how busy I was and how busy the staff are. At times, this hindered the progress of my projects, but the staff are very supportive and understanding, so it has been easy to get work done despite the time delays. I overcame this by continuously trying to reach out to staff and keep them up to date with my progress and needs from them. I would also reach out to different staff if I couldn't get ahold of a certain person, and they would always get me the help I need.

How have your views of public health practice been impacted by your SL/CE?

My views of public health practice have expanded because of my SL/CE. During my time spent at Open Arms, I was able to see how many different areas of public health are utilized just at one organization with a specific mission. It has shown me that public health practice is all-encompassing and there are aspects that are required for the organization to run smoothly that I hadn't thought about before, such as marketing, fundraising events and volunteer organization. All these aspects of the organization are needed to help the clients in need, which is the overall goal of public health.

How did your public health education prepare you to address any ethical or other issues you encountered during your SL/CE?

Throughout my public health education, I learned a lot about HIPPA regulations which came in useful during my time at Open Arms. Every project I worked on dealt with private health information about clients that cannot be shared with the public. I had to be diligent to follow HIPPA regulations to maintain the privacy of clients. Throughout school, I also learned about the social determinants of health. At Open Arms, I had firsthand experience witnessing

how the social determinants of health impact clients through analyzing the survey data. It was exciting to see how my education and real-world experience lined up.

Acknowledgements

The success and final outcome of this project required a lot of guidance and assistance from many involved and I am extremely grateful for all of those who helped me along the way. I would like to especially thank my Committee Chair, Dr. Hongmei Wang, and Committee Member, Dr. Melissa Tibbits. Their help and support has been crucial for the success of my capstone project. I would also like to thank my Preceptor, April Bogard, for allowing me to work with Open Arms and guiding me along the way with my project. April has taught me a lot about Open Arms and public health program implementation. It has been an extremely valuable experience for me. Aoife O'Connor, the Client Services Manager, has taken a lot of time out of her schedule to coordinate and explain the Service Learning Tasks I completed. I am very thankful for her time and generosity as well. Lastly, I would like to thank my Fiancé, family and friends who have been so supportive throughout this project. It has been a great opportunity for me to complete my public health education.

Appendix A
Open Arms Client Survey 2017

Annual Client Survey

2017

We want your feedback! We would like to hear about your experience with Open Arms of Minnesota: what you like, what you don't like, and your ideas for improvement. Your answers to this survey will be anonymous and will not impact your status as an Open Arms client.

Please complete this survey online at www.surveymonkey.com/r/OAMclientsurvey2017 or fill out this survey and send it back to us in the attached envelope.

Please return this survey to Open Arms by July 31 to be entered into in a drawing to win a \$25 Target gift card.

Information about you

1. How long have you been receiving meals from Open Arms?

<input type="checkbox"/> Less than 3 months	<input type="checkbox"/> 1 – 2 years
<input type="checkbox"/> 3 – 6 months	<input type="checkbox"/> 2 – 5 years
<input type="checkbox"/> 6 months to 1 year	<input type="checkbox"/> More than 5 years

2. Your gender:

<input type="checkbox"/> Male	<input type="checkbox"/> Transgender Male to Female
<input type="checkbox"/> Female	<input type="checkbox"/> Transgender Female to Male
	<input type="checkbox"/> I prefer not to answer

3. Your race (Check all that apply.)

<input type="checkbox"/> American Indian/Alaska Native	<input type="checkbox"/> Native Hawaiian/Pacific Islander
<input type="checkbox"/> Asian	<input type="checkbox"/> White
<input type="checkbox"/> Black	<input type="checkbox"/> I prefer not to answer

4. Your ethnicity:

<input type="checkbox"/> Hispanic
<input type="checkbox"/> Non-Hispanic
<input type="checkbox"/> I prefer not to answer

5. Your age:

<input type="checkbox"/> 18 to 25	<input type="checkbox"/> 55 to 65
<input type="checkbox"/> 25 to 45	<input type="checkbox"/> 65 and older
<input type="checkbox"/> 45 to 55	<input type="checkbox"/> I prefer not to answer

- 6/7. Your **primary** diagnosis with Open Arms: (please check one)

<input type="checkbox"/> HIV/AIDS	<input type="checkbox"/> Breast Cancer
<input type="checkbox"/> MS	<input type="checkbox"/> Lung Cancer
<input type="checkbox"/> ALS	<input type="checkbox"/> Colorectal Cancer
<input type="checkbox"/> Other Diagnosis: _____	<input type="checkbox"/> Other Cancer

8. Your Open Arms meal plan:

- | | | |
|---|---|--|
| <input type="checkbox"/> Red bag (<i>Meat and potatoes</i>) | <input type="checkbox"/> Teal bag (<i>Latino</i>) | <input type="checkbox"/> Black bag (<i>Renal</i>) |
| <input type="checkbox"/> White bag (<i>Variety</i>) | <input type="checkbox"/> Purple bag (<i>Gluten-free/dairy-free</i>) | <input type="checkbox"/> Yellow bag "Ground" sticker (<i>Ground</i>) |
| <input type="checkbox"/> Pink bag (<i>Heart healthy</i>) | <input type="checkbox"/> Green bag (<i>Vegan</i>) | <input type="checkbox"/> I Don't Know |
| <input type="checkbox"/> Yellow bag (<i>Flavor-neutral</i>) | <input type="checkbox"/> Blue bag (<i>African style</i>) | |

9. Your delivery day:

- ☐ Monday
- ☐ Tuesday
- ☐ Wednesday
- ☐ Thursday
- ☐ Friday
- ☐ I pick up my meals at Open Arms
- ☐ I pick up my meals at a satellite location (e.g., Humphrey Cancer Center, Mother Baby Center, etc)

Questions about the meals you receive

FROZEN ENTREES

10. On average, how many of the **frozen entrees** do you eat per week? (Please check one.)

- ☐ 0 entrees
- ☐ 1-2 entrees
- ☐ 3-4 entrees
- ☐ 5 entrees
- ☐ I don't get frozen entrees

11. What are your **favorite frozen entrees**?

- a. _____
- b. _____
- c. _____

12. What are your **least favorite frozen entrees**?

- a. _____
- b. _____
- c. _____

MILK AND CEREAL

13. How much of the **milk** do you drink?

- ☐ Most or all of the milk
- ☐ Some of the milk
- ☐ None of the milk
- ☐ I do not receive milk

14. How much of the **cereal** do you eat?

- ☐ Most or all of the cereal
- ☐ Some of the cereal
- ☐ None of the cereal
- ☐ I do not receive cereal

BROWN BAGS

15. How often to you eat the items in the brown bag?	Always	Sometimes	Never
Green salad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deli salad (coleslaw, potato, pasta, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sandwich	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Soup	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desserts (cookies, bars, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bread (baguette)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Apples	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Oranges	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bananas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other fruit (occasionally sent instead of apples, bananas, or oranges)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
String cheese	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hard boiled eggs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. My **favorite** item in the **brown bag** is: _____

17. My **least favorite** item in the **brown bag** is: _____

Questions about the quality and quantity of food delivered to you.

18. Overall, would you say:

- ☐ There is too much food delivered.
- ☐ There is not enough food delivered.
- ☐ There is just the right amount of food delivered.

19. If you do not eat all of the food delivered to you, why aren't you eating the food? (Please check all that apply.)

- ☐ There is too much food delivered.
- ☐ I'm too sick to eat the food.
- ☐ I don't like the food.
- ☐ I eat everything.
- ☐ Other - please specify: _____

20. Think about all the food you receive from Open Arms. Please tell us how often you agree with the following statements:	Always	Usually	Some- times	Rarely	Never
I like how the food smells.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like the way the food looks.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like the way the food tastes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like the way the food is cooked.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The food is too hot or spicy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The food is too salty.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is enough variety in the food.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The food matches my cultural and/or personal preferences.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The food matches my health care provider's recommendations for my diet.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I read the ingredient labels on the food provided to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. Think about all the food you receive from Open Arms.	Excellent	Very Good	Good	Fair	Poor
How would you rate the quality of your home delivered meals overall?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. Is there anything you'd like to share with us about the food you are receiving from Open Arms?

Questions about Open Arms staff and volunteer delivery drivers

23. How often you agree with the following statements about Open Arms' staff :	Always	Sometimes	Never	N/A
Open Arms staff listen to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Open Arms staff care about me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Open Arms staff are easy to reach by phone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Open Arms staff want to hear my questions and concerns.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Open Arms staff give me the information I need.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

24. How often you agree with the following statements about volunteers :	Always	Sometimes	Never	N/A
The volunteer delivery drivers are friendly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The volunteer delivery drivers care about me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The volunteer delivery drivers listen to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The volunteer delivery drivers are on time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The volunteer delivery drivers provide good customer service.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

25. Is there anything about Open Arms' staff and/or volunteers that you'd like to share with us?

Questions about Open Arms nutrition education

26. Are you interested in attending cooking classes at Open Arms?

- ☐ Yes
☐ No

27. If yes, what **type of cooking classes** are you interested in attending? (Please check all that apply.)

- ☐ Cooking for my diagnosis
☐ How to gain weight
☐ How to lose weight
☐ Managing heart disease/high cholesterol

- ☐ Cooking for digestion problems
☐ Managing medication side effects
☐ Shopping tips
☐ How to add more vegetables to your diet

☐ Other - please list:

Questions about how the meals help you

28. Thinking about your home-delivered meals, would you say ...	Yes	No	NA
The meals I eat make a difference in maintaining my health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eating the right foods helps me manage the side effects of my medication or treatment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regular meals help me take my medications on schedule.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Receiving meals from Open Arms helps me eat healthier foods.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eating meals from Open Arms helps me achieve or maintain a healthy weight.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eating food from Open Arms helps me feel better.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eating food from Open Arms helps improve my energy level.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food from Open Arms helps me continue to live at home.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food from Open Arms helps me stay out of the hospital.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food from Open Arms helps me maintain my independence.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The food I get from Open Arms provides comfort in my day.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel a sense of community with Open Arms staff and volunteers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The food I get from Open Arms decreases my stress.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Open Arms has helped increase my knowledge about nutrition related to my condition.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

29. Questions about resources	Yes	No	NA
Do you always have enough money or food assistance/food stamps/SNAP to buy the food you need?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During the past month, did you have to choose between buying food or buying medication?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During the past month, did you have to choose between buying food or paying your rent or utility bills?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
On one or more days during the past month, did you skip meals because you had no food and no money or food assistance/food stamps, SNAP to buy food?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In general would you say that home-delivered meals from Open Arms has helped you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Did you know you can talk to a dietitian who can provide you with no-charge nutritional counselling?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

30. When we have something important to tell you about your delivery, can we text you?

- ☐ Yes
- ☐ No
- ☐ I do not have a phone with text capabilities

31. Do you have dogs or cats at home? (Check all that apply.)

- ☐ Yes, I have a dog(s).
- ☐ Yes, I have a cat(s).
- ☐ I do not have dogs or cats.

32. If you have dogs or cats, would you be interested in receiving pet food with your delivery?
(Check all that apply.)

- ☐ I am interested in receiving dog food.
- ☐ I am interested in receiving cat food.
- ☐ I am not interested in receiving food for my pet.
- ☐ I do not have dogs or cats.

Children and Caregivers

33. Are your children receiving meals from Open Arms?

- ☐ Yes
- ☐ No
- ☐ I do not have children.

34. If your children are receiving meals:

	Yes	No	NA
Having my children receive food from Open Arms decreases my stress level about feeding my family.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My children like the food they receive from Open Arms.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

35. Does your caregiver receive meals from Open Arms?

- ☐ Yes
- ☐ No
- ☐ I do not have a caregiver.

36. If your caregiver receives meals:

	Yes	No	NA
Having my caregiver receive food from Open Arms decreases my stress level about feeding my family.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My caregiver likes the food they receive from Open Arms.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

We want to better understand how we are helpful to you and what we can do to improve. Is there anything else you would like to tell us? Anything you particularly like about Open Arms? Anything you'd like us to consider changing?

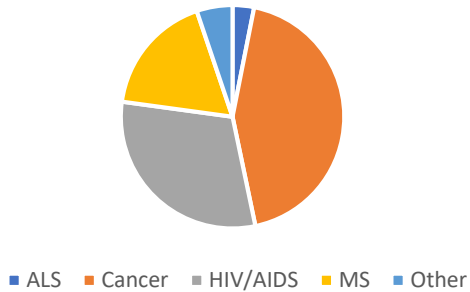
Thank you for completing our survey! Your responses are important to us!

If you would like to be entered into the drawing for a \$25 Target gift card, please fill out the attached slip and return in the envelope with your survey (your survey answers will remain anonymous!).

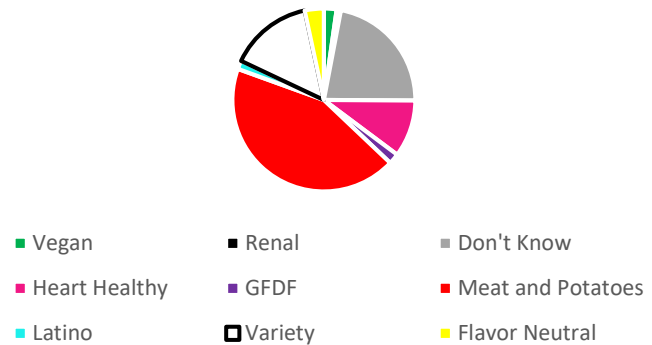
Appendix B

Client Characteristics

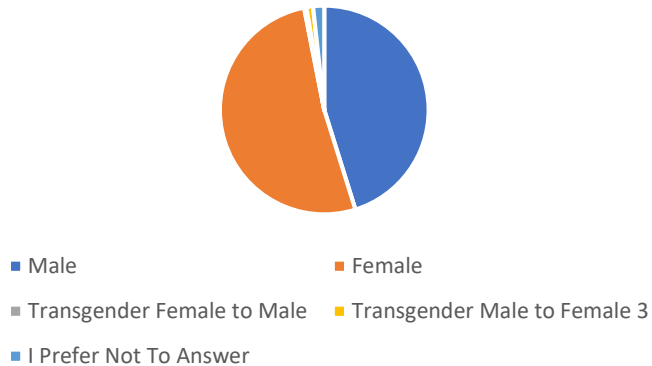
Client Surveys, by Diagnosis
(N=289)



Client Surveys, by Meal Plan (N=267)



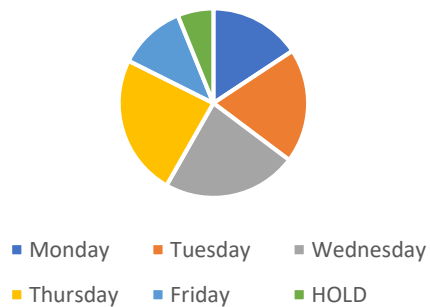
Gender (N=290)



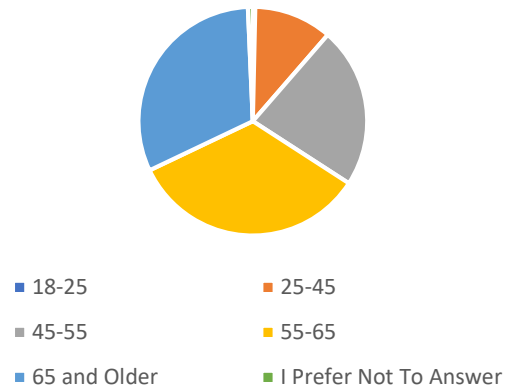
How Long Have You Been
Receiving Meals From Open Arms?
(N=290)



Client Survey, by Delivery Day
(N=261)



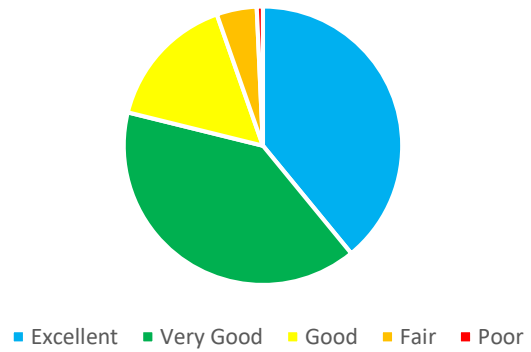
Age (N=290)



How Clients Feel About Amount of Food Delivered Each Week (N=278)

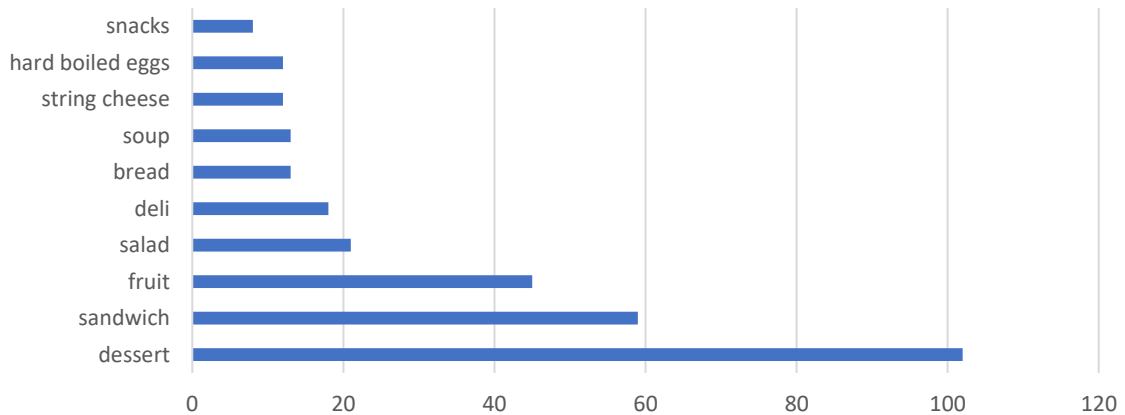


Overall Quality Of Home Delivered Meals (N=269)

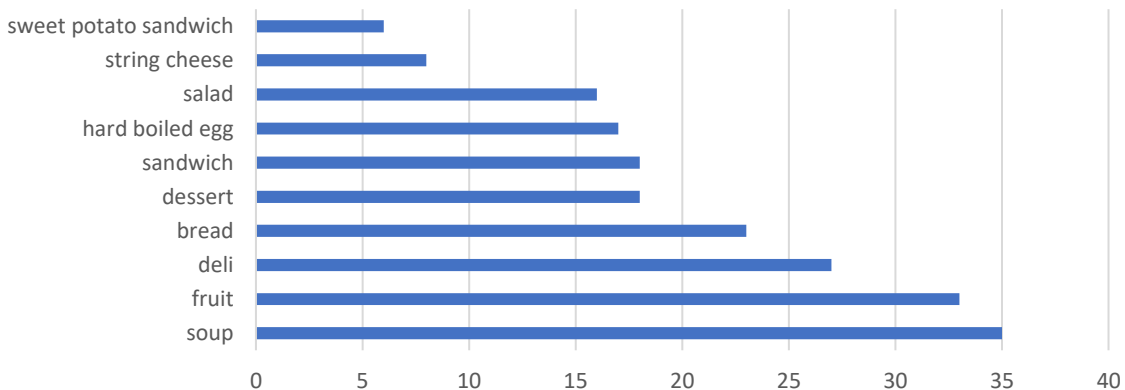


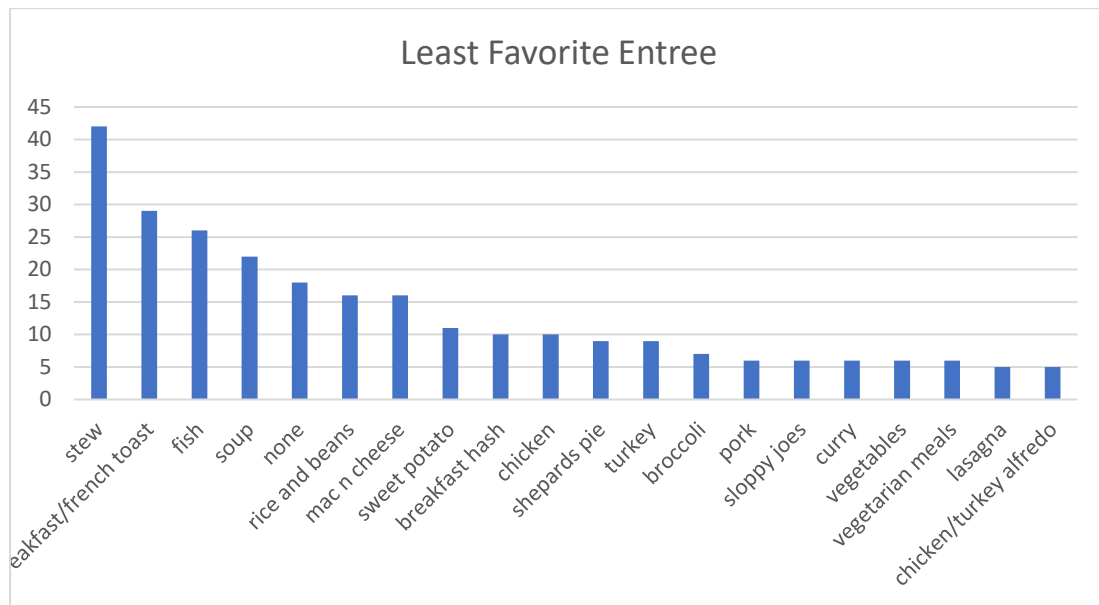
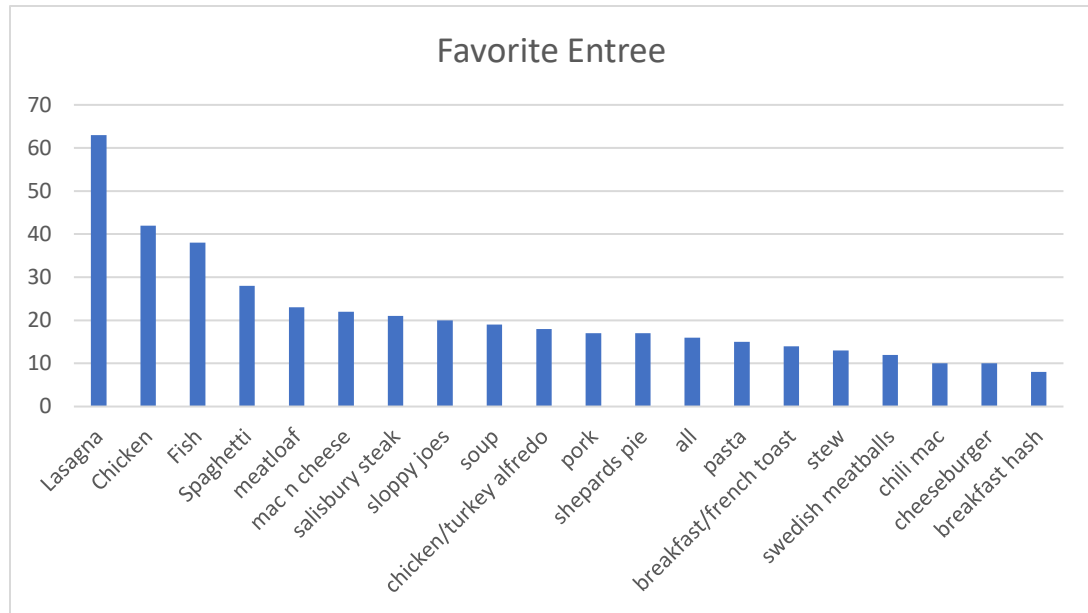
Brown Bag and Entrée Ranking

Favorite Brown Bag Items

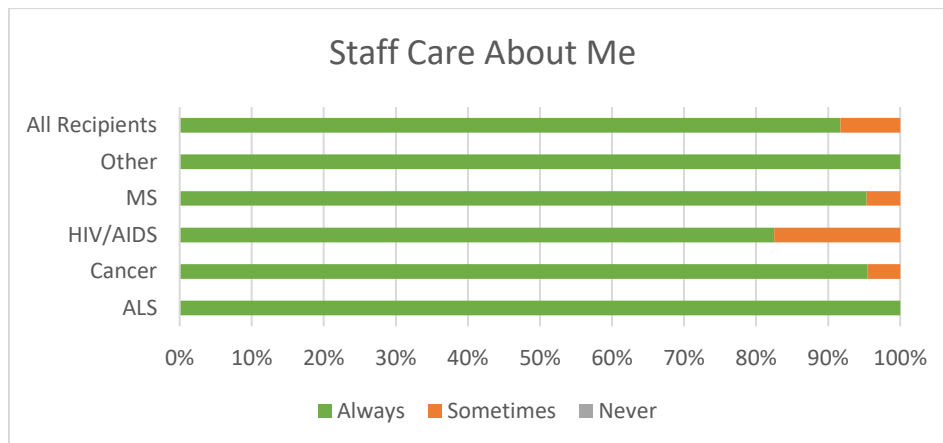
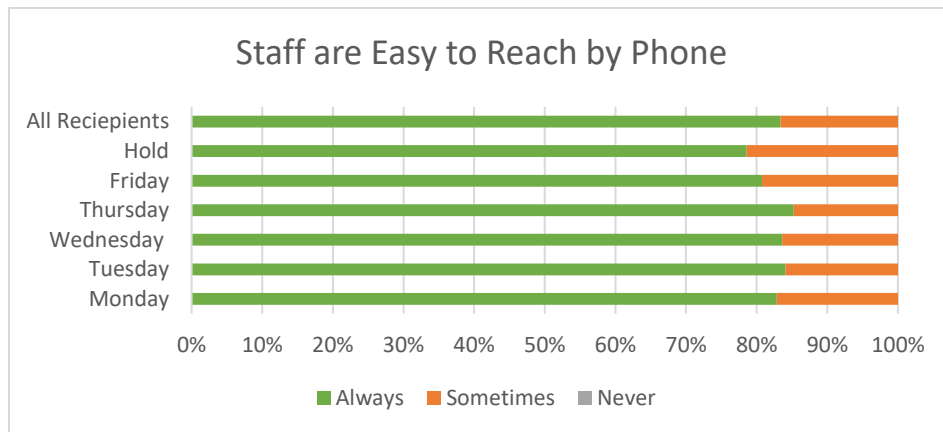
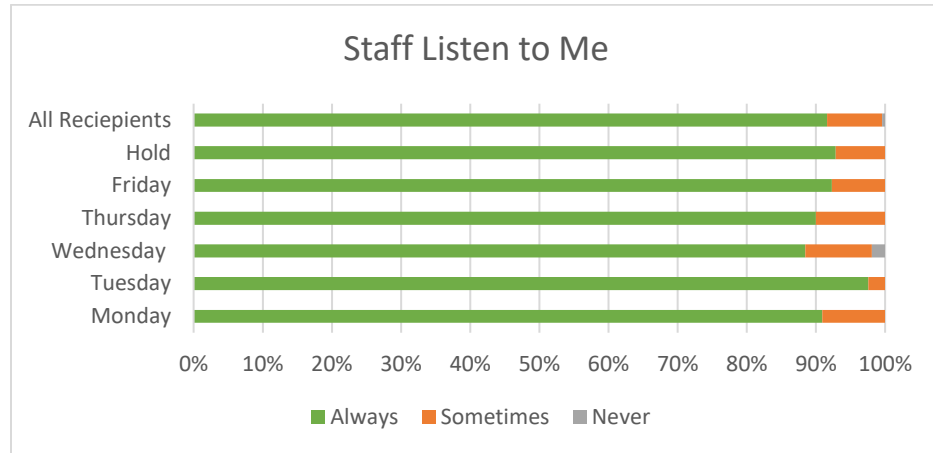


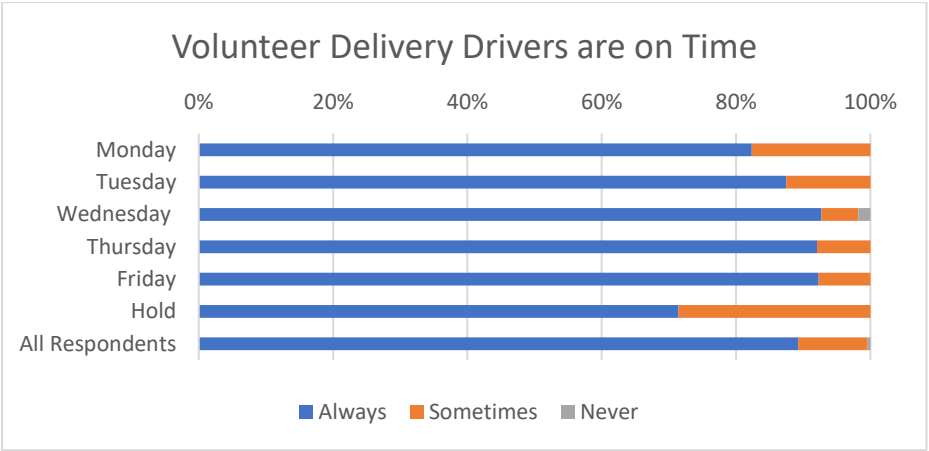
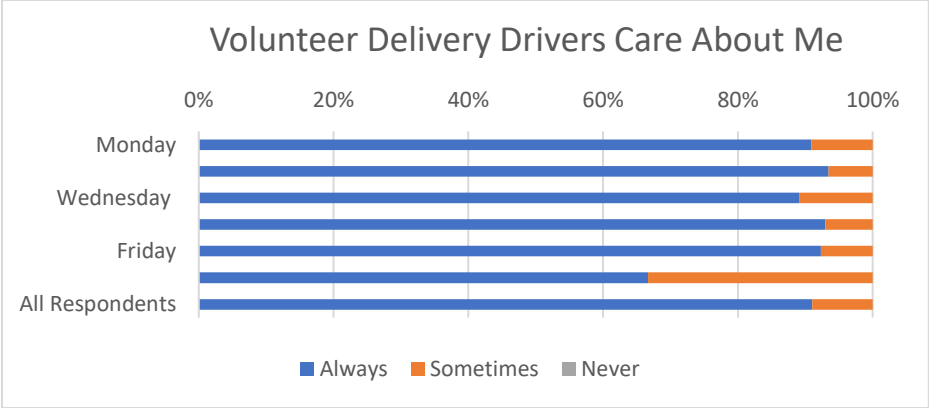
Least Favorite Brown Bag Items





Select Graphs from Staff and Volunteer Delivery Driver Satisfaction





Additional Service Learning Analysis

Select Open-Ended Responses about the Service and Food Provided

Variety

Just a variety of foods in the meals. Otherwise you're wonderful. thank you.

Would love fresh vegetables during summer.

Portion Sizes

Four entrees would be enough for me. With 1 soup in summer and 2 soups the rest of the year.

Review portions in precooked meals. Getting smaller and smaller than real portions.

Caregiver/Dependent/New Client Requests

We share meals: Me and my 12 year old daughter. It would be nice if I could get meals for my daughter as well. We live alone.

Mentally ill son sometimes eats meals when there is no money. Would like to receive for schizophrenic son so he would eat better. He has severe diabetes.

Menu Type

I don't like bland food but I can't eat spicy.

I wish more meals were like what I grew up with. Meat and potatoes, meat loaf, roast beef, ham and white potatoes.

Fruit/Vegetables

I like more fresh fruits and bread and fresh sandwich.

The salads are what I, personally, expect to receive from you the most...wish the bag was bigger but I understand. You should place the cucumbers separately so the bag won't turn into mush, keeps everything fresher.

Nutrition

I am very interested in talking with a dietitian. How do I go about getting the help?

Hard Boiled Eggs

The only thing I can think of is the hard-boiled eggs are hard to peel.

Packaging

How long can the frozen dinners stay frozen??

Packages are hard for MS people to open without crushing/squeezing them. Bowl to open can be hard too.

The cereal packaging is hard to open also.

Food Fare

I would like to get information regarding Food Fare so I can afford to eat.

Delivery Requests

More flexibility for scheduling deliveries.

Thank You's

Your program is a life saver for an independent single going through a very sad time.

You saved my life. I am a senior, I live alone and when I was diagnosed with breast cancer I had no idea how I would be able to make meals. Like I said you saved my life.

The relief from stress knowing I have food is immense.

Open Arms is excellent! No one could expect better! Thank you!

The fact that you are there and concerned about our health and conditions gives us a good feeling that we are secure in the knowledge you are there. That is a very large portion of a healthy life. We thank you.

Open Arms is the best meal plan out there! From the staff, volunteers and cooks to having such delicious and healthy, well balanced meals.

God Bless each and every one.